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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,835	02/14/2001	Dirk Quintens	27500/016	1614

7590 11/30/2006  
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Greenville, SC 29601

EXAMINER
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DICUS, TAMRA

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/782,835

Applicant(s)

QUINTENS ET AL.

Examiner

Tamra L. Dicus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

All prior rejections are withdrawn due to Applicant's amendments to the claims.

#### ***Claim Objections***

Claims 18 and 19 are objected to because of the following informalities: Claim 18: b-(3,4-epoxycyclohexyl)ethyltrimethoxysilane is misspelled (No e's should be after -ethyl- or between tri- and -thoxysilane. Claim 19: poly carbonate should be one word. Appropriate correction is required).

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 6-8 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Santo et al.

Santo teaches according to instant claim 1, an ink jet recording comprising a support (substrate of inherently opaque paper or sheet of filed alumina hydrate, polycarbonate, or resin-coated paper, or easy-adhesion layer undercoated substrate, 11:24-52, meeting wet strength paper of instant claim 1 and opaque further to instant claim 16), and an ink receiving layer comprising an inorganic porous pigment (boehmite and amorphous alumina hydrate, 4:1-23, 8:55-60, 9:64-10:30, per instant claim 1-2), binder silanol modified polyvinyl alcohol (9:64-10:30, 10:8-10),

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and film-forming polymer latexes inherently having a glass transition temp lower than 50 degrees C selected from SBR, methacrylate-butadiene copolymers, and acrylic ester copolymer latexes (styrene-butadiene and acrylate latex, 9:64-10:30, per instant claims 1, 6-8). Claims 1-2, 6-8 and 16 are met.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Santo in view of '964 Ogawa et al.

Santo essentially teaches the claimed invention as set forth above.

Santo does not expressly disclose an inorganic amorphous pigment of silica as per instant claims 3-4, while teaching amorphous porous alumina hydrate pigments may be mixed with silica.

'964 Ogawa teaches amorphous silica and porous alumina hydrate pigments are interchangeable white pigments equivalents used in ink receiving layers for the purpose of making them white (6:25-45).

It would have been obvious to one of ordinary skill in the art to modify Santo to include a silica pigment as instant claims 3-4 because '964 Ogawa employs them to add white color and large pore volume to an ink-receiving layer (6:25-45, '964 Ogawa). Regarding the size range, it

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has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284.

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Santo in view of Furukawa et al.

Santo essentially teaches the claimed invention as set forth above.

Regarding instant claims 9 and 10, Santo is silent to further comprising a cationic binder (inclusive of “mordant”) like that of instant claims 9 & 10.

Furukawa teaches cationic polymers are conventionally used with polyvinyl alcohol-series polymers in ink-receiving layers, including the one listed in claims 9 and 10 for improving the ink fixation (col. 4, lines 44-50 and col. 12, lines 18-25 and lines 40-45).

It would have been obvious to one of ordinary skill in the art to modify Santo to include a cationic binder as instant claims 9 and 10 because Furukawa conventionally employs cationic mordants for ink and dye fixing improving ink absorption within an ink-receiving layer (4: 44-68, 5:1-20, Furukawa).

Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Santo et al. in view of Mochizuki et al. and further in view of USPN 6,022,440 to Nordeen et al.

Santo is relied upon above for all it teaches as set forth above.

With regard to claims 11-13, and 15, Santo is silent to an ink jet recording element having an adhesive polymer disposed between a support and ink receiving layer. However, Santo suggests including an easy-adhesion layer as an under coat as per instant claim 11.

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Nordeen teaches an ink jet image composite and the method of making such, including an adhesive polymer disposed between a support and ink receptive (receiving) layer, where the adhesive may be a releasable thermoplastic layer of suitable adhesive polymers such as copolymer styrene-butadiene, acrylics, vinyl acetates (vinyl acetates includes vinylesters), and their combinations at col. 2, lines 33-40 and col. 6, lines 41-55.

With regards to claims 12-14, Mochizuki teaches several examples of acrylate latex polymers at col. 6, lines 30-44 including the copolymers of instant claims 12 and 14, and the polyacrylate latex of instant claim 13.

It is well known in the art that the copolymers and polymers claimed are adhesive polymers as taught by Nordeen at col. 6, lines 46-55.

It would have been obvious to one with ordinary skill in the art to modify Santo to include an adhesive layer as claimed because Santo suggests an adhesive undercoat layer and Mochizuki and Nordeen provide adhesive latex polymers and copolymers in order to produce an ink jet recording element which provides additional assistance for release of the ink receiving layer from the support and provide added protection for a transferred image composite at col. 6, lines 41-46.

Claims 5, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Santo in view of Shaw-Klein et al. (SK)

Santo essentially teaches the claimed invention and is relied upon for all its teachings as set forth above.

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Santo does not expressly disclose the modification degree range of silanol and the viscosity requirements of the aqueous solution of instant claim 5 or producing silanol modified PVA from hydrolyzing copolymer vinyl acetate and silane monomer vinyltrimethoxysilane per instant claim 17. Also Santo is silent to teaching PVA modified with the silanes of instant claim 18.

SK teaches silanol modified PVA reacted with silanes having hydrolysable groups such as alkoxysilanes including those of instant claims 17 and 18 (3:50-60, vinyltrimethoxysilane, 3-methacryloxypropyltrimethoxysilane, and b-(3,4-epoxycyclohexyl)ethyltrimethoxysilane).

It would have been obvious to one of ordinary skill in the art to modify Santo to include a PVA modified as claimed because SK teaches preferred silane group agents for ease of handling and reactivity within an ink receiving layer (3:14-60, 4:10-40, SK). The modification degree and viscosity are properties of the PVA and as such are either inherent to the end product or if not inherent, obvious to have conventionally made as the same starting elements are provided by the prior art.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Santo in view of '964 Ogawa et al. and further in view of Mukoyoshi et al.

Santo teaches according to instant claim 1, an ink jet recording comprising a support (substrate of inherently opaque paper or sheet of fired alumina hydrate, polycarbonate, or resin-coated paper, or easy-adhesion layer undercoated substrate, 11:24-52, meeting wet strength paper of instant claim 19), and an ink receiving layer comprising an inorganic porous pigment (boehmite and amorphous alumina hydrate, 4:1-23, 8:55-60, 9:64-10:30, per instant claim 19),

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binder silanol modified polyvinyl alcohol (9:64-10:30, 10:8-10), and film-forming polymer latexes inherently having a glass transition temp lower than 50 degrees C selected from SBR, methacrylate-butadiene copolymers, and acrylic ester copolymer latexes (styrene-butadiene and acrylate latex, 9:64-10:30, per instant claim 19).

Santo does not expressly disclose an inorganic amorphous pigment of silica as per instant claim 19, while teaching amorphous porous alumina hydrate pigments may be mixed with silica.

'964 Ogawa teaches amorphous silica and porous alumina hydrate pigments are interchangeable white pigments equivalents used in ink receiving layers for the purpose of making them white (6:25-45).

It would have been obvious to one of ordinary skill in the art to modify Santo to include a silica pigment as instant claim 19 because '964 Ogawa employs them to add white color and large pore volume to an ink-receiving layer (6:25-45, '964 Ogawa). Regarding the size range, it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284.

Further regarding claim 19, the combination does not teach (d) dimethylamine-epichlorohydrine copolymer (instant claim 19).

Mukoyoshi teaches an ink jet recording having amorphous silica, styrene-butadiene copolymer and epichlorohydrin-dimethylamine copolymer (dimethylamine-epichlorohydrine copolymer equivalent) at col. 11, lines 30-60 exhibiting an effect of enhancing the water-resistance of printed ink images.

It would have been obvious to one of ordinary skill in the art to modify the combination to include dimethylamine-epichlorohydrine copolymer because Mukoyoshi teaches an ink jet



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recording exhibiting an effect of enhancing the water-resistance of printed ink images (Abstract, col. 9, lines 1-40, col. 10, lines 60-68, and col. 11, lines 30-60 of Mukoyoshi).

### *References of Interest*

- Maruyama teaches a modified polyvinyl alcohol made from hydrolyzing a copolymer of vinyl acetate and produced by introducing silyl groups like trimethylmethoxysilane (4:5-42) and vinyltrimethoxysilane (5:24-27, instant claim 17), where a known degree of modification is from 0.01 to 10% by mole (7:1-10) and the viscosity is no greater than 70 cp (abstract).

### *Response to Arguments*

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is 571-272-1519. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tamra L. Dicus  
Examiner  
Art Unit 1774

November 21, 2006



RENA DYE  
SUPERVISORY PATENT EXAMINER

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11/21/06